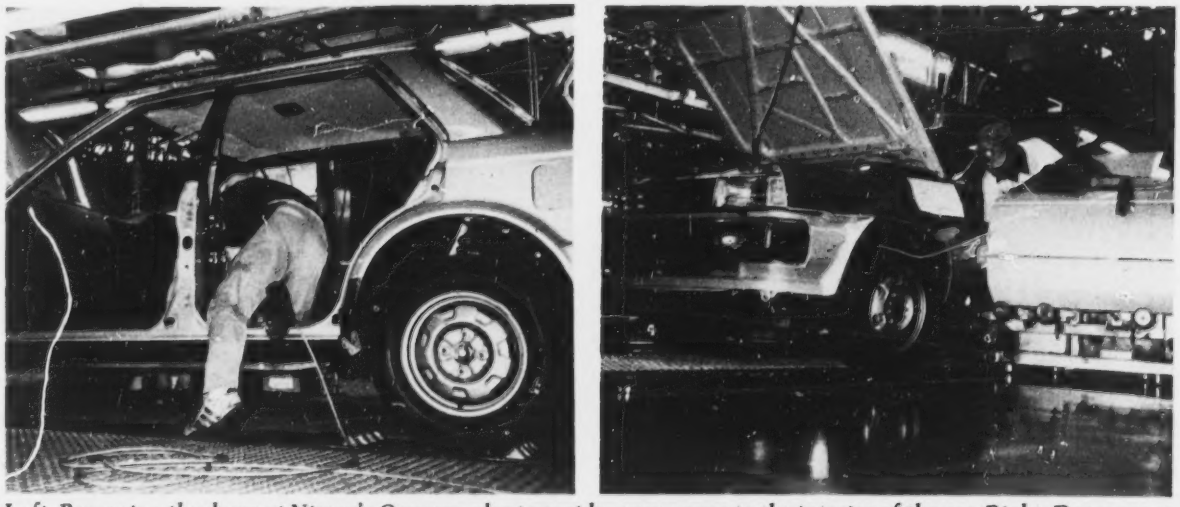
HOW WORK PRACTICES SEND PRODUCTIVITY SOARING

In our continuing series on the Japanese auto industry, we take a look at the world's most efficient and fastest assembly lines with an eye toward how these high productivity ideas can be adopted here.



Left: Removing the doors at Nissan's Oppama plant provides easy access to the interior of the car. Right: Doors are re-attached at the end of the assembly line. The employee merely drops pins through the hinges.

by John McElroy

I stepped off the bullet train in Nagoya, set my bags down on the platform and looked all around. I didn't know where to go.

I knew my hotel was adjacent to the station, but I couldn't even read the sign to know which stairway to take to get off the platform. So I pulled out my map and the compass that I had accidently packed, found my bearings and set off to find my room.

I hadn't taken two steps when it occurred to me, that in a way, things had come full circle. In the early 1950s the Japanese had come to the United States to learn how the Americans were able to build cars so efficiently. Like me at the train station, they weren't even sure where to start.

But now, 35 years later, I was in Japan to find out how the Japanese had taken what they learned in America and improved on it.

Basically, I knew what to expect. I had read quite a bit about Japanese assembly operations and had talked to a number of American auto executives to determine what they look for when they take plant tours and how they measure the efficiency of an operation.

I also had toured many American auto plants so I could establish a good basis for comparison. But it's one thing to read and talk about things and another to see them with your own eyes. And what I saw were some of the most efficient and fastest assembly lines, cranking out high quality products.

But what I also learned is that there is no magic, culture or technology that gives the Japanese any manufacturing advantage. What they do is use their resources more efficiently. What follows below are some of the basic differences I saw between American and Japanese assembly operation.

Japanese Plant Complexes

Generally speaking, a Japanese assembly plant is actually part of a huge complex that includes engine and transmission assembly, forging, casting and a host of other operation. The Japanese got the idea for congregating many operations into one complex by looking at the way many old American facilities, such as Ford's Rouge complex, are set up. It may be an old idea, but it's still a good one, as evidenced by the up-coming Buick City complex.

The reasons a manufacturing complex makes good sense are many. First, by having all buildings close together, the supply lines between operations can be very short. Anyone who understands the importance of

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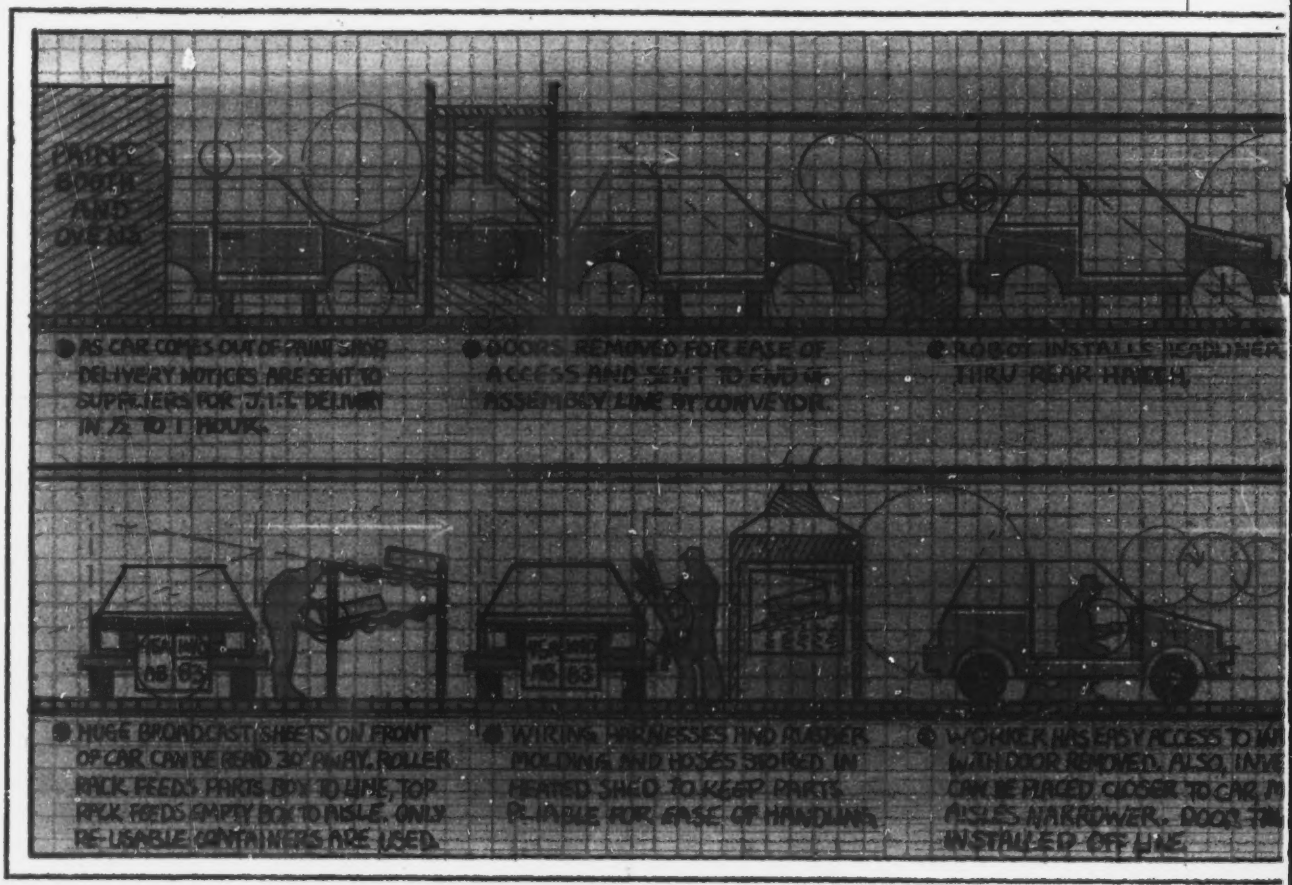
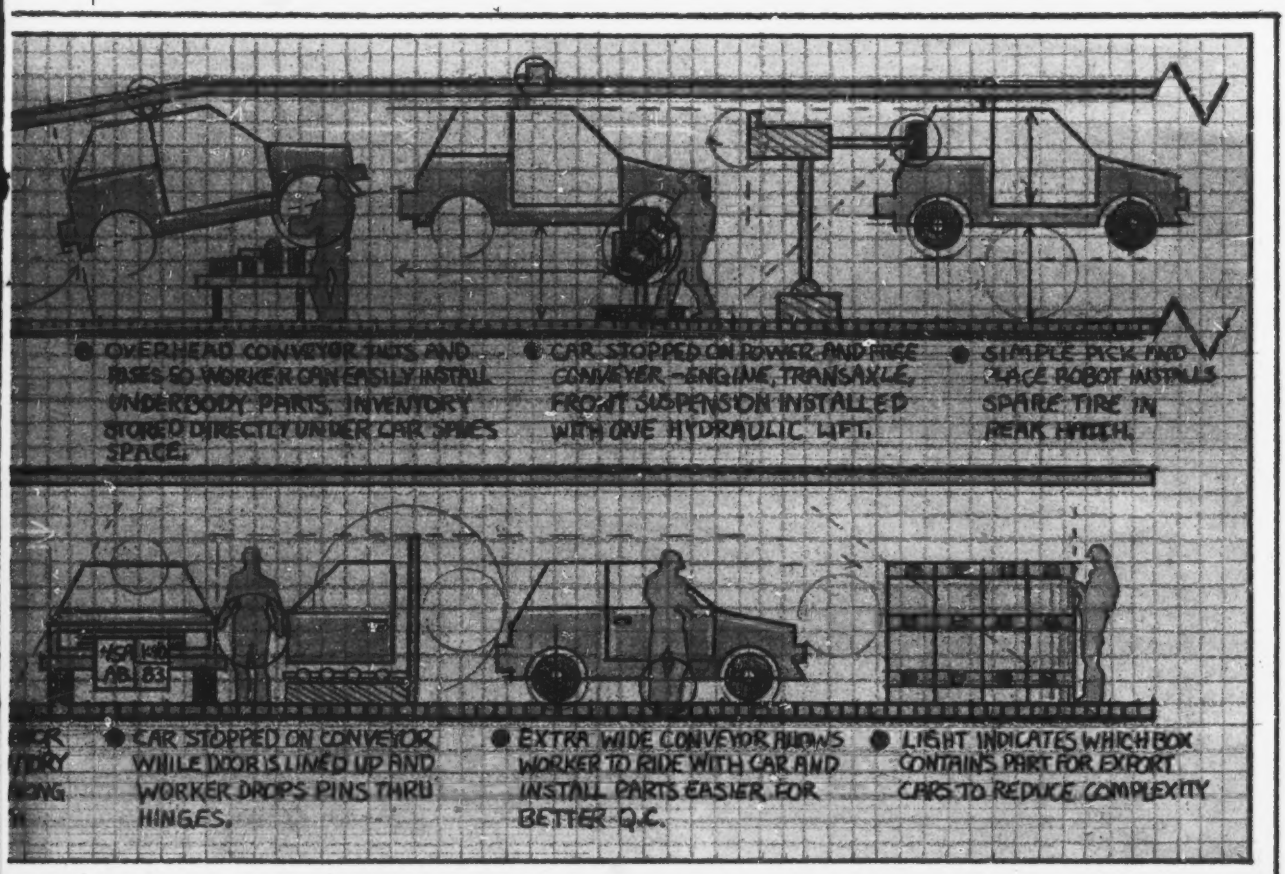

PARTS BODY IN AND OVERSEAS
● AS CAR COMES OUT OF PAINT SHOP DELIVERY NOTICES ARE SENT TO SUPPLIERS FOR J.I.T. DELIVERY IN 2½ TO 1 HOURS.
● DOORS REMOVED FOR EASE OF ACCESS AND SENT TO END OF ASSEMBLY LINE BY CONVEYOR.
● ROBOT INSTALLS HEADLINER THRU REAR WINDOW.
● HUGE BROADCAST SHEETS ON FRONT OF CAR CAN BE READ 30' AWAY. ROLLER RACK FEEDS PARTS BOX TO LINE, TOP RACK FEEDS EMPTY BOX TO AISLE. ONLY RE-USABLE CONTAINERS ARE USED.
● WIRING HARNESSES AND RUBBER MOLDING AND HOSES STORED IN HEATED SHED TO KEEP PARTS PLIABLE FOR EASE OF HANDLING.
● WORKER HAS EASY ACCESS TO CAR WITH DOOR REMOVED. ALSO, PARTS CAN BE PLACED CLOSER TO CAR IN AISLES. NARROWER. DOORS TO BE INSTALLED OFF LINE.

Newest Japanese And US Assembly Plants Compared

	SUZUKI Kosai *completed 10/83*	MAZDA Hofu *complete 10/82*	GMAD Lake Orion *completed 12/83*
Plant Size	553,270 ft²	1.5 million ft²	3.7 million ft²
Products	Cultus (Chevy Sprint)	626	Cadillac & Olds C-car
Line Rate	30/hour 60,000/year*	62.5/hour 240,000/year plus 21.8 CKD/hour 80,000 CKD/year	75/hour 260,000/year
Employment	600*	1800	6700
Man-Hours Per Car	20†	14‡	48.7
Wages	approx. $7.40/hour $14,200/year§	$10.55/hour $20,300/year§	$12.67/hour $26,350/year§
Absenteeism	4% total	4.5% total	1% (excluding AWOL)
Inventory	4 hours average	30 minutes min., 1 day max.	6 hours average of high cost items
Relief System	Mass	Mass	Mass
Robots	137	155	157
**=one shift*	*†=includes stamping and engine & trans. as'mbly*	*‡=includes stamping*	*§with bonuses, excluding fringe benefits*

Although the newest American assembly plant has more robots and high-tech equipment than its Japanese counterparts, it uses far more floor space, employees and man-hours of labor to produce a car. *Source: Automotive Industries*


● OVERHEAD CONVEYOR TILTS AND RISES SO WORKER CAN EASILY INSTALL UNDERBODY PARTS. INVENTORY STORED DIRECTLY UNDER CAR SAVES SPACE.
● CAR STOPPED ON POWER AND FREE CONVEYER—ENGINE, TRANSAXLE, FRONT SUSPENSION INSTALLED WITH ONE HYDRAULIC LIFT.
● SIMPLE PICK AND PLACE ROBOT INSTALLS SPARE TIRE IN REAR HATCH.
● CAR STOPPED ON CONVEYOR WHILE DOOR IS LINED UP AND WORKER DROPS PINS THRU HINGES.
● EXTRA WIDE CONVEYOR ALLOWS WORKER TO RIDE WITH CAR AND INSTALL PARTS EASIER FOR BETTER Q.C.
● LIGHT INDICATES WHICH BOX CONTAINS PART FOR EXPORT CARS TO REDUCE COMPLEXITY

Above: Composite of efficient final assembly operations

kanban or just-in-time (JIT) inventory control can appreciate that.

Second, you can run the complex with one staff and one powerhouse, which eliminates a lot of redundancy. Some Japanese complexes are located right by the ocean with their own docks and shops so that the cars can literally come off the assembly line and be sent to the shops that are only a couple hundred yards away.

Very Flexible

Another aspect common to all Japanese assembly plants is that they have the ability to build two or more different car lines. In fact, it is not all all uncommon to see front-wheel-drive and rear-wheel-drive cars, both left hand and right hand drive, coming down the same line, one right after the other. This is done so that production of one type of car can be quickly shifted to another if sales of one car slip while the other soars.

The Japanese told me that they started doing this after the 1973 oil crisis, when large car sales dried up, idling a number of facilities. An added advantage of making several different cars in one plant is that it makes it much easier to balance line operations and maintain routine schedules. That makes kanban and JIT easier to do as well.

In a chronological sense, any description of Japanese assembly plants should start with tamping operations. But there is enough involved there that it's worth a separate story in a later issue.

Body Assembly

If there is any part of assembly operations that differ amongst Japanese assembly plants, it's probably body assembly. It seems that each company has its own idea of the best way to weld a car together. But compared to new American assembly plants, there is one noticeable difference. I never saw one Robogate line in Japan. For the most part they use multi-spot press welders.

For all their differences, there are several things common to all Japanese body assembly lines—they are all cramped and crowded, and they all use simple robots. Most Japanese car companies design and build many of the robots they use. As a result, their robots are cheaper to install, service and repair. These simple robots only have two or three axis of movement.

For example, floor pans will be moved from welding station to welding station by a lift-and-carry conveyor. At each station a hydraulic ram will raise the floor pan to the height of the horizontal robot arm. At that point, the whole robot (not just the arm) will index in and perform its welding program.

An exception is Subaru's Gunma plant, which is probably the most heavily robotized plant in Japan for its size. They have many sophisticated

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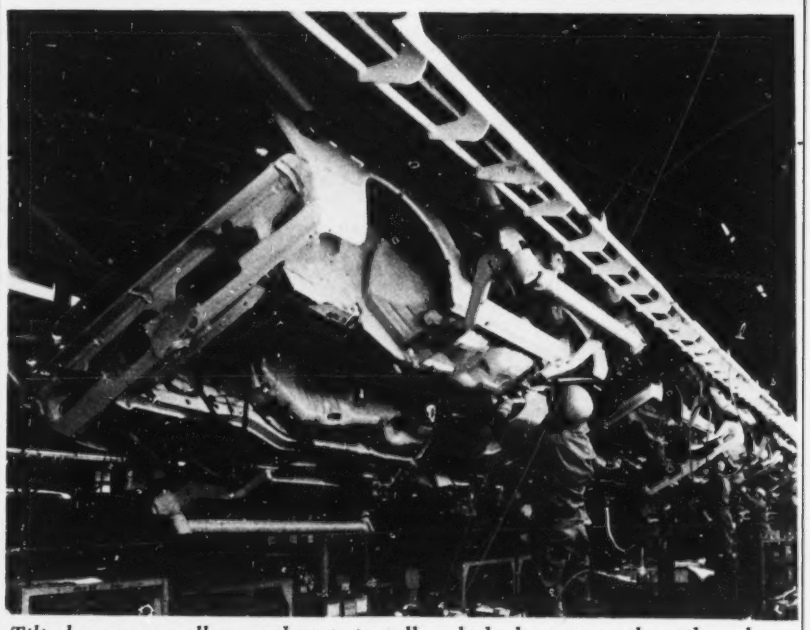

Tilted conveyors allow workers to install underbody parts easily without having to stretch or crane their necks. Shown is the trim line at Nissan for its 210 model.

robots, including robots that hold parts for other robots to weld. Since Subaru only has this one assembly plant, the company feels it needs as much programmable flexibility it can get to build all its different models.

Recently, the Japanese have begun to use sophisticated vision-equipped robots in operations such as applying underbody sealer. But compared to new American plants, the Japanese don't use more robots, either in welding or anywhere else in their assembly plants.

Batch Production

At the other end of the spectrum in body assembly is Honda's Suzuka plant. Rather than go for maximum flexibility, Honda batch produces its cars. In other words, you'll see an hour's worth of red, two-door hatchback Civics, all going down the line in one batch.

But to get the flexibility it needs to produce different models, Honda uses two multi-spot welders that are mounted on rails. When they want to change from one model to another, they'll stop the line, push one multi-spot welder out of the way and move the next one into place. That may sound a little strange, but Honda must know what it's doing. The line runs at 84 cars an hour! [Note: time and time again, I saw equipment mounted on rails for quick tool and die change.]

Yet another example of body assembly flexibility is at Mazda's Hofu plant. At the final welding station, three different fixtures are mounted to a rotating cylinder and there is a cylinder set horizontally on each side of the line. The cylinders index to present the fixture they need to weld the type of car they want to build-323, (GLC), 626 or RX-7. Presently, however, Hofu only makes the 626.

Honda also has a slick automatic door hanging machine that was designed and built by Honda Engineering. The doors come from the welding line by conveyor and are fed to the door hanger which automatically aligns the door to the body (which is stopped at this station) and runs in the hinge bolts.

There are other differences between American and Japanese body assembly lines. For one thing, many American stamping operations also weld parts such as doors and floorpans, but in Japan that's only done in the body assembly line. And all Japanese body assembly operations operate with mass relief, though this is true of many American today.

But most importantly, the Japanese line achieve 98% first-time-through capability, meaning only 2% of the car bodies need to be sent through the line again for re-work or repair. The best American plants have 88% first time through capability.

Paint Operations

To a company, no Japanese automaker would allow me into their paint booths. The typical excuse was that we couldn't go through their "clean rooms" because we would track in too much dirt and lint. But I suspect the real reason is that the Japanese auto companies are currently robotizing their paint operations and they didn't want me to see what they were installing.

I ran across this secretiveness in many areas. At first I thought they were trying to hide their latest technology, but as time went on I began to realize they also didn't want me to see how they implement and operate their equipment. And in some cases I think they didn't want people to know how they were able to get away with such simple equipment.

Nonetheless, I was able to get some important information about Japanese paint operations. For one thing, this is one area where they will operate with tag relief. And there are no high-bake repair ovens. With strict adherence to quality control, they are able to achieve 95-98% first-time-through capability. So since very few cars need to be repaired, they can handle all repairs on the two-tons line.

Final Assembly

I saw so many neat ideas in the final assembly area of each Japanese plant, that it's difficult to generalize. Still, there are some basic similarities.

All final assembly areas operate with mass relief and this is the one area that relies heavily on manual labor. A crucial difference compared to most American plants is that each production worker doubles as an inspector. Although they have QC inspectors at the end of the line, the idea here is to prevent a bad part or sloppy work from going to the next station. As a result, Japanese assembly plants operate with hundreds of fewer repairmen and inspectors (see chart).

As a car comes out of the paint shop, delivery notices are sent out to

the suppliers who have between ½- and 1-hour to get their parts to the line. Actually, the suppliers have received a build forecast a month in advance, and this final notice is used to "fine tune" what is needed. As a result, the suppliers will deliver seats, headliners, carpeting, and other items in the sequence and color that will be used. In most American plants, by comparison, the suppliers' delivery notice is sent out when the floor pan is built, thus adding another 10 to 12 hours into the supply system.

At many Japanese plants, though not all, the doors are removed from the car before it goes down the trim line. This offers several advantages. First the line workers have easy access to the interior of the car, thus simplifying operations.

Second, the door trim, glass and hardware can be installed on an off-line operation, ensuring better fit and finish. And last, the aisles can be narrower, so the production workers are never more than one step away from the parts they are installing. The doors meet up with the car at the end of the line where they are aligned with the car and a worker drops pins through the hinges.

Better Ergonomics

The Japanese place heavy emphasis on work-place ergonomics to get better quality and employee satisfaction. Several simple examples include:

- Huge broadcast sheets that can be read 30 feet away. This allows production workers to look two to three cars down the line, so they know what parts to have ready.
- Many plants use simple pick and place robots to install the spare tire. It may not sound like much, but I'm sure these robots cost well under $20,000, meaning they pay for themselves in less than a year.
- One slick idea Suzuki uses is to store its wiring harnesses and rubber moldings in a heated shed to keep them pliable and easy to handle. Plus, the electrical connectors expand because of the heat, making it an easy matter to plug them together.
- At Mazda's Hofu plant an extra wide conveyor allows production workers to ride along with the car, rather than have to walk along it, trying to install parts.

Japanese Manpower Savings Detailed

Section	Manpower Savings
• Unauthorized absenteeism	240
• Mass relief	220
• Union committeemen	30
• JIT inventory control	350
material handling: 270	
invnty. cycle chkers: 40	
mat'l handlg. repairmen: 40	
• Quality control	450
inspectors: 210	
repairmen: 240	
• Material handling engineering	50
no cardboard or wood: 50	
• Plant complexes	160
staff	
powerhouse	
• Organization levels	120
4 levels vs. 6-7	
• Sourcing	180
purchasing complete seats	
purchasing balanced and mounted tires and wheels	
Total Savings	**1830**

Source: Harbour & Assoc.

Listed is a breakdown of where the Japanese automakers are able to use fewer employees compared to an American assembly plant. Although it is not listed here, flexible work rules permit even greater levels of efficiency. Note that American plants would be unable to achieve this efficiency simply by adding automation.

Perhaps the greatest advantage that Japanese plants have over their American counterparts is in their material handling. But it is an advantage that derives from simplicity, not high-technology.

For one thing, you will never see any cardboard packing or wooden pallets in a Japanese assembly plant (Nissan excepted). They eliminate their dunnage by using re-usable containers. And since only small quantities of parts are delivered to the plant, they can be handled by a "train" of carts pulled by a small truck.

The containers are placed on roller racks that are inclined toward the assembly line, while the empties are placed on the top rack and roll to the aisle. If big bins are needed for heavy parts, such as starters, the bins are designed to tilt forward so the workers don't have to bend over and reach into them.

Delivery trucks are also equipped with roller racks so that parts can be unloaded quickly. I watched one truck back up to a shipping dock at Mazda's Hofu plant where a chain conveyor operated by the driver unloaded two racks containing 75 engines in less than 1 minute. And I saw the same thing done at Suzuki's Kosai plant with seats which were then automatically loaded on another conveyor which brought them to the assembly line in the sequence they would be used. I rarely saw any forklift trucks and I never saw an automated guided vehicle syster...

Suzuki's Kosai plant also installs the powertrain and front suspension with only one hydraulic lift. To do this they stop the car, rather than have a carousel with many lifts tracking with the line. Not only is it simpler, it saves a lot of floor space and investment in lifts.

To handle the complexity of different cars going to different countries, Mazda also has a parts bin with different lights to indicate which part the worker should pick up to put on the car. Presently this is used for different types of coolant and owner's manuals, but it's an idea I suspect will spread. However, it occurred to me that this could also be handled with color-coded broadcast sheets.

One other thing I saw at Mazda was workers turning off all the lights and equipment during their lunch break to conserve energy.

Conclusions

As a result of attention to detail and scrupulous efforts to reduce inventory and defects, Japanese assembly plants are more efficient than their American counterparts. They have some slick innovations, to be sure, but their efficiency does not come from greater numbers of robots or new technology. Indeed, it seems to me that the American automotive industry has a broader technology base than the Japanese. But now it's time for the teacher to copy a few things from the students and to improve on them.

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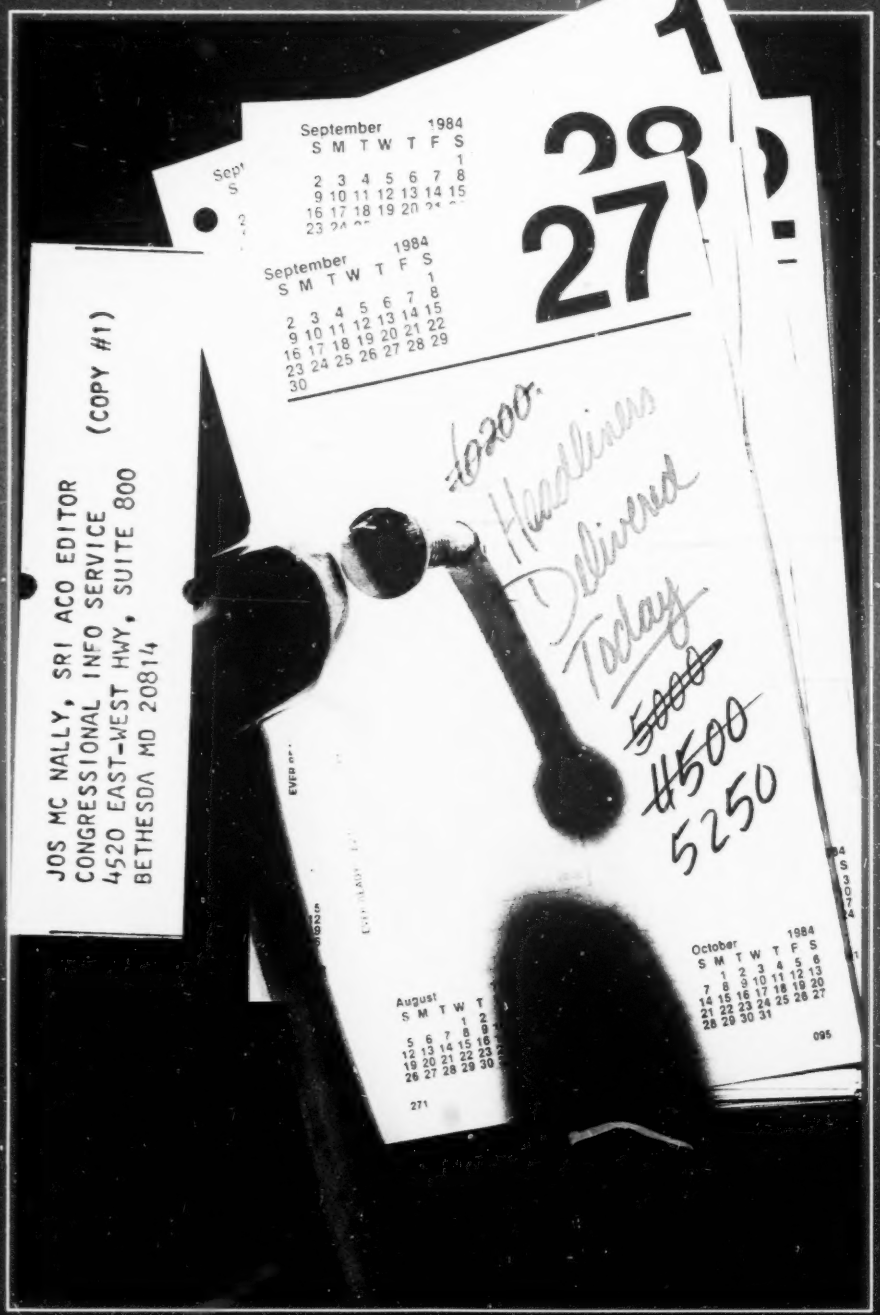

Nailing Down Dates
STABILIZING PRODUCTION SCHEDULES

Materials '85
What Downsizing Has Wrought

Inside Japan
Quick Die Change: The Times To Beat

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*Does not appear in all issues

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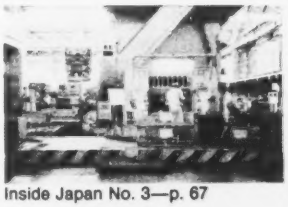
New Cars '85: the guts, the glamour, the glory—the goofups. Also: *AI's* SPC Roundtable and all the new cars Europe has to offer.

QUOTABLE

"At our current and future projected level of sales, the company would not and could not meet the content requirements of the law and be a successful competitor in the US market. It is not likely that Nissan would make new investments. Our future growth and indeed our current operations would be jeopardized."—Marvin T. Runyon, president and CEO of Nissan Motor Mfg. Co. USA, commenting on proposed legislation which wouldddetermine domestic content ratio by a company's sales volume. Nissan estimates it would be required to meet a content ratio of 70%.



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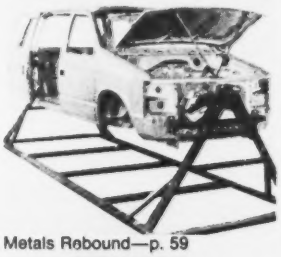

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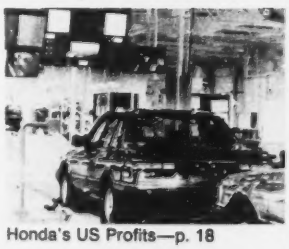

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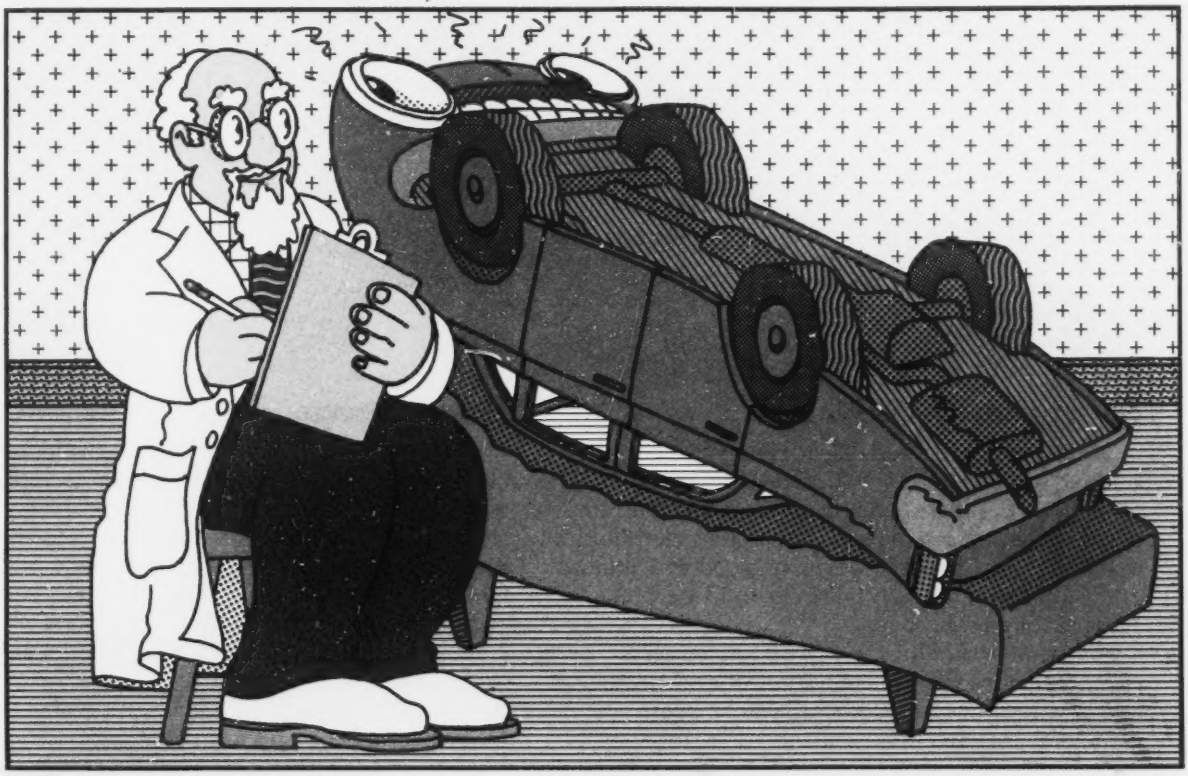
Psychographics & The Auto Industry

DETROIT GOES PSYCHO!

The automakers are examining new marketing tools in hopes of reaching just the right buyer in just the right niche. Psychographics is Detroit's latest 'buzz-word,' but demographics still has a lot of mileage left in it.



"SO, WE'VE TRACED YOUR INFERIORITY COMPLEX BACK TO THE DAY YOUR OWNER TRADED YOU IN ON A LITTLE IMPORTED CAR..."

by Elizabeth A. Capelli

Here's an election year grabber for you: "In 1972, all Volvo owners voted for George McGovern." That's Thomas O'Grady, director of Automotive Services at Chase Econometrics, giving a whimsical example of how consumer psychographics could change the way cars are designed and marketed in the very near future.

Elizabeth A. Capelli is an Editorial Intern from Villanova University.

O'Grady, formerly with GM's market analysis and forecasting group, bases his assumption on the psychographic profile of Volvo owners at the time.

Psychographics, like the more commonly used marketing tool of demographics, categorizes people into groups as an aid to marketing products. Rather than using age, income and education as does demographics, psychographic information categorizes the general psychological wants and needs of consumers to determine whether a person will buy a given product.

Although psychographics is not new, it is new to Detroit, and is certainly raising some controversy there.

"Psychographics is helpful, but only in a broad sense," says Charles Kitz, director of Business Planning and Consumer Research at Chrysler. "Demographics is much more predic-

tive, especially in the targeting sense.

"[The psychographic categories] 'survivors,' 'sustainers,' 'achievers,' etc., are categories based on attitudes and behavior, yet these attitudes are basically driven by income, education and age—all levels of demographics," Kitz says.

"Refinements and adjustments will be made to improve vehicle quality. However I don't believe the use of psychographics and demographics will change the approach strategy," Kitz concludes.

Fragmented Consumers

One reason psychographics has attracted the attention of at least some automakers is Detroit's recognition of an increasingly segmented market of automotive consumers. Lloyd E. Reuss, VP of General Motors' new small-car group, explains. "We've treated the car market as a mass one, but now I'm convinced that concept is dead," he says. Reuss claims that target marketing—specific products aimed at specific groups, sometimes in specific areas—will be the kingpin of future marketing.

Buick's John Dabels, general director of marketing and sales planning, elaborates. "The industry is breaking down the traditional market, and breaking away from 'price/size' relationships," says Dabels. "The target market emphasis today is mostly based on an appeal to certain groups, and this emphasis has broken away from the traditional way of thinking."

Dabels predicts that Buick may develop specific cars to appeal to specific groups in the future. In doing so, marketing will go "beyond the [traditional] media," Dabels explains, and will include more specific forms of media such as regional special edition magazines and direct mail. Buick has already increased its use of direct mail marketing, he adds.

The implications of this trend for the auto industry, and its advertising media, are enormous.

Database Resources in Marketing

Market research companies have been quick to capitalize on this new trend with sophisticated, computer-aided tools. Vast amounts of consumer data are acquired by such programs as: PRIZM (Potential Rating Index Zip Market), developed in 1974 by Claritas Corp., a consulting company that specializes in target marketing campaigns; and VALS (Values And Life Styles), developed at Stanford Research Institute (SRI) in 1978. Information from this data provides companies with psychographic, demographic and "geo-demographic" data categorizing the needs of new consumer segments.

(According to officials at both SRI and Claritas, PRIZM and VALS will merge before the end of the year).

Of the two programs, VALS is more deeply involved with psychographic information, according to Brook Warrick, senior consultant of the VALS program at SRI. It categorizes people on the basis of their attitudes, needs, wants, beliefs and demographics, he says. SRI and the VALS program were key in honing the use of psychographics for corporate marketing.

Psychographics was first developed in the early '50s, but was never really successful, according to Warrick. It hasn't been until recently, say the past 5-6 years, that psychographics has been actively used in marketing, he remarks.

The Outer & Inner Psycho

The basic tool of the VALS program is the VALS typology. This is divided into four major categories: need-driven, outer-directed, inner-directed and integrated. Included in these four categories is a total of nine lifestyles: survivors, sustainers, belongers, emulators, achievers, I-amme, experiential and societally-conscious.

Members of VALS, almost 130 corporations, use the findings in market research, product development, packaging and design, strategic planning, advertising and human resources. (Non-members may have access to information, however, follow-up material, statistics and reports are only provided to subscribers.)

The automotive industry provides the best example of applying the data in market research.

Participants interested in market research have access to the large database collected annually by Simmons Market Research Bureau (a marketing database resource used by PRIZM as well). Data from the surveys cover demographics, media usage, consumption of products, etc. VALS participants also have access to data on several thousand product brands and media specifics, explains Warrick.

These data are applied by researchers in order to segment markets, estimate market size and position products and services. For the auto industry, for instance, VALS data show that:

- *Achievers*, (a lifestyle which constitutes 20% of the population), under the *Outer-directed* category, buy more large and luxury cars.
- *Belongers*, (39% of the population), under the *Outer-directed* category, tend toward "family-sized" cars.
- The *Societally Conscience*, (11% of the population), under *Inner-Directed* category, purchase more gas savers.
- The *Need-Driven*, (11% of the population), purchase used cars.

Furthermore, big differences exist in how many cars the various lifestyle households are likely to own, their assessment of features desired, how they are used, etc.

But Does It Help?

As SRI's Warrick explains it, the high penetration of foreign cars in America may be due to a change in the psychology of the auto marketplace. "Detroit can't understand why 'we' purchase foreign cars," he says. "It's due to one of the major value groups. Values are different than in the past . . . and will continue to change in the future."

Chrysler's Kitz is not necessarily convinced of the value of pyschographics in marketing cars. He says that some psychographic information is helpful, yet some of it is redundant. "Most of the data we received was information that was already known. We find that the most reliable and available source of information we can get is from the people—the buyers themselves.

"Psychographics has not really added any fundamental change to car marketing, or had any effect upon Chrysler directly," says Kitz, "however it can be useful as a reinforcement. It really is just common sense

(Continued)

what type of person is going to buy what type of car."

Kitz also mentions the role the mass media plays in the car market. "You wouldn't expect to see a TV commercial of a young man in his 20s getting out of a black Lincoln Continental ready to play tennis, or you wouldn't see a woman in a long evening gown get out of a small sporty car. It's just not expected."

(Chrysler is among the few corporations which is not a member with VALS. However, the following corporations are members of the program: AMC, GM, Honda Research of America, Mercedez-Benz of North America, Mitsubishi Motor Sales, Nissan Motor Corp. USA, Regie Renault and Volvo of America Corp.).

Geo-Demographics

All this interest in psychographics doesn't mean that demographics is dead as a marketing tool. "Psychographics and demographics are valid and very valuable in marketing if they are used together," explains Chase's O'Grady. "They will get a lot more sophisticated and will be used to a greater extent in the future. They are focusing more on the consumer now, and less on the changing economical platform."

One such sophisticated marketing tool using demographics is PRIZM.

The VALS Segments Explained

Need-Driven...buy more out of need than choice.

	Survivors	Sustainers
% of population	4%	7%
Lifestyle	Struggling for survival. Distrustful.	Hopeful for improvement over time. Concerned with security.
Buying Style	Price dominant. Focused on basics.	Price important. Want warranty.

Outer-Directed...buy with an eye to apperances and in accord with established norms

	Belongers	Emulators	Achievers
% of population	39%	8%	21%
Lifestyle	Preservers of status quo. Seek to be part of group.	Upwardly mobile. Emulate rich and successful.	Materialistic, comfort-loving. Oriented to fame and success.
Buying Style	Do not want to try something new. Heritage brand buyer.	Conspicuous consumption. Sacrifice comfort and utility for show.	Luxury and gift items. Like 'new & improved, but not radically changed, products.

Inner-Directed...buy to satisfy their self-expressive, individualistic needs

I-Am-Me	Experiential	Societally Conscious
% of population	3%	6%	12%
Lifestyle	Transition between outer & inner directed. Very individualistic	Seek direct experience. Intense personal relationships.	Simple, natural living. Socially responsible.
Buying Style	Impulsive. Trendy products.	Process over product. Interested in what product does for them, not what it says about them.	Discriminating. Want true value and environmentally sound products.

Integrated...rare people who have melded power of the Outer-Directed with sensitivity of the Inner-Directed. Their lifestyle is one of tolerance and self-assurance; their buying style is oriented to ecologically sound, esthetically pleasing, one-of-a-kind products.

Source: Vals Program—SRI Institute

VALS is a system developed by SRI International for categorizing consumers according to their values and lifestyles. The VALS typology provides comprehensive segmentation into nine specific groups. Each group is so distinctive in behavioral make-up that it can constitute a specific market segment. By targeting these groups, the effectiveness of marketing and advertising strategies can be improved.

By combining demographics with basic Census information, it produces "geo-demographics". This data describes demographic as well as socio-economic groups at the neighborhood level.

In the mid '70s, Claritas Corp. used US Census data to classify all residential neighborhoods in the US, and assign those to homogeneous groups. The PRIZM system is used by marketers to answer three basic questions:

- Who are my best customers?
- Where can I find more people like them?
- What are the most cost-effective means of reaching and motivating these better prospects?

Bruce Mac Nair, account services manager of Claritas, says the program currently provides useful information to many companies including divisions of GM and Ford, AMC, and such imports as Subaru, American Honda and Toyota.

PRIZM's Advantages

Mac Nair points out that advantages of geo-demographics over other systems are: greater variance in behavior; more accurate definition of important consumer target groups; and the ability to focus marketing efforts on selected target groups at national, regional and local levels.

PRIZM has identified 40 distinct

How PRIZM Zip-Clusters Show Buying Habits

Quintile 1

Zip-Cluster Nicknames	Base % Comp.	Market % Comp.	% Pen.	Index Conc.	Rank
Grain Belt	1.48	3.28	0.449	221	1
Agri-Business	4.12	6.40	0.315	155	2
Tobacco Ro[illegible]	1.01	1.52	0.307	151	3
Share Croppers	3.66	5.52	0.307	151	4
Gray Power	2.02	3.03	0.305	150	5
Furs & Station Wagons	2.23	3.12	0.284	140	6
Golden Ponds	2.96	4.01	0.275	135	7
Blue Blood Estates	0.62	0.81	0.267	132	8
Quintile 1 Averages	**18.10**	**27.69**	**0.311**	**153**	

Quintile 5

Zip-Cluster Nicknames	Base % Comp.	Market % Comp.	% Pen.	Index Conc.	Rank
New beginnings	4.80	3.19	0.135	66	30
Old Yankee Rows	1.92	1.20	0.127	63	31
Downtown Dixie-Style	2.41	1.41	0.119	58	32
Emergent Minorities	2.21	1.22	0.112	55	33
Heavy Industry	2.09	1.08	0.105	52	34
Single City Blues	2.20	0.77	0.071	35	35
New Melting Pot	1.37	0.41	0.060	30	36
Hispanic Mix	1.60	0.47	0.060	29	37
Public Assistance	2.48	0.62	0.051	25	38
Bohemian Mix	0.83	0.15	0.036	18	39
Urban Gold Coast	0.47	0.05	0.023	11	40
Quintile 5 Averages	**22.38**	**10.57**	**0.096**	**47**	

This section of a PRIZM report basically divides US households into five Quintiles, each comprising about 20% of the total (shown here are the first and fifth quintiles). The Base % Composition column shows each group's size in relation to all other groups. The Grain Belt zip-cluster, for example, shows that 1.48% of all US households are in Grain Belt-type neighborhoods.

The Market % Composition column shows that Grain Belt households bought 3.28% of the domestic full size cars in 1982. The % Penetration column shows the fractional penetration of full size domestic cars in the Grain Belt-type neighborhood.

The Index of Coincidence is a multiplication of the Base % Composition column and the Market % Composition column. In this case it indicates that Grain Belt-type neighborhoods are 2.21 times as likely to buy a full size domestic car as the average.

Comparing the top ranked Quintile in this report to the bottom ranked Quintile, as we have done, shows that the neighborhood types in Q1 are three times as likely to buy a full size domestic as the neighborhood types in Q5.

This is the most basic of all the PRIZM reports.

"MITCHELL JUST DISCOVERED HE'S TOO OLD TO BE A YUMP."

neighborhood types, or clusters, which are ranked and grouped according to recognized socio-economic levels.

Each cluster was assigned a number at random by computer, and after intensive studies on the clusters each was assigned an Archie-Bunker-type nickname. For example, educated, affluent executives and professionals in elite suburbs were called "Blue Blood Estates," "Money and Brains," and "Furs and Station Wagons."

Upper-middle class, child-raising families in outlying suburbs were given such nicknames as "Young Suburbia," and "Blue-Chip Blues."

Separate analyses of Census data have assigned neighborhoods to PRIZM Clusters based on the following geographic units: Zip Codes (36,000 neighborhoods), Census Tracts (43,000 neighborhoods), and Census Block Groups/Enumeration Districts (215,000 neighborhoods). These were given with the comparable sets of the 40 Clusters available to each.

Says Mac Nair, "The majority of PRIZM clients choose to work at a Zip Code level due to the ready availability of Zip Coded consumer data, and the resulting cost-effectiveness of this system.

"However, for certain specialized applications, such as site-location or direct-mail analysis, the smaller Tracts or Block Groups can be used for improved targeting efficiency," he adds.

Examples & Future Implications

Psychographics and demographics are terms that are so familiar within the inner sanctum of automotive marketing departments that they have become part of the lingo. Mention "psycho" or "demo" to almost any marketing manager or any sales promotion manager and he'll tell you what market group the company's new model is aimed at, and why.

For example, Nissan, in designing the new 300ZX, had to maintain a tradition to satisfy a loyal market group. Nissan hopes the new car will appeal not only to the "personal car" buyer, but to more males as well.

However, data on people who bought the 280ZX show that slightly fewer men bought the car than the market demographics would suggest.

One of AMC/Jeep/Renault's regional sales promotion managers, Rick Comfort, says that the new Diamond Editions Encore and Alliance are both cars targeted at "the more sophisticated, affluent, better-educated group between ages 18 and 49.

"In the upper age bracket," says Comfort, "the car is targeted at the young professional, both male and female. But, we are looking more toward the female car buyer with the sporty hatchback."

Now that most major companies have access to information, both "psycho" and "demo," they are finding more ways to target products and even predict the results, as Nissan is doing with the new Z car, and Renault with the Diamond Editions.

For 1985, Renault has moved up a step higher with the Alliance and has just introduced a convertible version of the car. And though the company only expects to sell 7000 to 8000 of the ragtops in 1985, it's clear that through the introduction of such up-market products, along with the rumored future debut of a larger family sedan and a mini-van, AMC/Renault is seeking entrance to a more affulent arena of buyers. Such marketing stragegy depends largely on market testing and the study of psychographics and demographics.

Trends Or Just Trendy?

"Psychographics and demographics are used to such a great extent today, and are focusing much more on the consumer because of the major trends taking place," explains Chase's O'Grady.

"Psychographics and demographics are both ways of looking at a market," he says. "However, people's impressions of them tend to 'swing' and this really doesn't make much sense.

"It shouldn't be a matter of 'jumping in' on either psychographics or demographics," he points out. "Taking the population and breaking it down to certain groups makes these both sound forms of research, but it is the combination of the two techniques that is useful."

Opinions about the value of either psychographics or demographics are always changing—one may be "in fashion" now, which, of course, is totally illogical, O'Grady says.

And in the future? O'Grady claims that other sound marketing approaches may be available. But, "advancements in technology would have to be made in order to devise something to replace [psychographics and demographics]," he concludes. ■

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